

U.S. PATENT APPLICATION

for

CONTAINER CAP

Inventors: Scott G. Manke

CONTAINER CAP

FIELD AND BACKGROUND OF THE INVENTION

[0001] The present invention relates generally to the field of a container cap for sealing a container and method, and more particularly to a cap composed of two different materials to create a seal for the container.

[0002] It is generally known to provide a container for fluids, for example, paint. Such known containers are typically cylindrical metal containers with a cylindrical lid. The lid of such known containers fits into a cylindrical shape “chime” or rim having a u-shaped channel that frictionally receives and engages the lid. However, built-up, dried material, such as paint, in the channel formed during use may prevent a lid from being fully sealed within the channel, which may cause the leakage of the fluid in the container.

[0003] It is also generally known to provide a plastic container for fluids, for example, paint. Such known plastic containers typically have a lid that screws onto a thread of the container. However, such known plastic containers may not form as tight a seal between the container and the lid as do such known metal containers. In such known plastic containers a seal is typically formed by providing a separate gasket placed in the lid to affect the seal. Other methods provide various nubs or projections formed in the lid to affect a seal of the container. Such methods may not form effective seals if the separate gasket is lost or broken or if the projection or nub becomes worn or breaks off during use.

[0004] Thus, there is a need for a fluid container cap which has a resilient gasket integrally formed with the lid. There is further need for a container cap that has a resilient gasket integrally formed with the lip that will seal against a fitment mounted in the container. It would still further be desirable to provide a container system and method having one or more of these or other advantageous features.

SUMMARY OF THE INVENTION

[0005] There is provided a container cap for a container having a neck defining an opening into the container. The container cap comprises a lid including a top surface and a wall extending downward from the top surface. The lid is configured to engage the neck of the container and cover the opening. The lid is composed of a rigid material. A resilient gasket is integrally formed with the lid. The cap may have a wall including a threaded portion and an unthreaded portion with the gasket residing between the threaded and unthreaded portion.

[0006] There is also provided a container comprising a body defining an interior space configured to hold a fluid. The container body has a neck portion defining an opening into the body. A cap comprising a lid including a top surface and a wall extending downward from the top surface. The lid is configured to engage the neck of the body and cover the opening and composed of a rigid material. A resilient gasket is integrally formed with the lid. The wall of the cap may include a threaded portion and a unthreaded portion with the gasket residing between the threaded and unthreaded portion.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a top plan view of an exemplary embodiment of a container cap on a container.

[0008] Fig. 2 is a sectional view of the container cap and container illustrated in Fig. 1 along the line 2-2.

[0009] Fig. 3 is a top plan view of an exemplary embodiment of a container cap.

[0010] Fig. 4 is a sectional view of the container cap illustrated in Fig. 3 along the line 4-4.

[0011] Fig. 5 is a bottom plan view of the container cap illustrated in Fig. 3.

[0012] Fig. 6 is a perspective bottom view of an exemplary embodiment of a container cap.

[0013] Fig. 7 is a perspective top view of an exemplary embodiment of the container cap illustrated in Fig. 6.

[0014] Fig. 8 is an exploded sectional view of an exemplary embodiment of a container cap and container.

[0015] Fig. 9 is a partial, detailed sectional view of the container cap and container illustrated in Fig. 8.

[0016] Fig. 10 is a partial, detailed sectional view of the container cap and container illustrated in Fig. 8, with the container cap engaged with the container and illustrating an exemplary embodiment of an integral resilient gasket in contact with a fitment positioned in an opening of the container and neck of the container.

[0017] Fig. 11 is a partial, detailed sectional view of the container cap and container illustrated in Fig. 8, with the container cap engaged with the container and illustrating an exemplary embodiment of an integral resilient gasket in contact with a fitment positioned in the opening of the container.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0018] Referring to FIGS. 1 and 2, a container 10 for containing fluid and a cap 40 are illustrated. FIG. 1 also illustrates an exemplary embodiment of a torque indicator 60. Container 10 includes a body 12 formed by vertical sidewall 14 extending between the horizontal top portion 16 and a horizontal base 18 defining an interior space 13 to hold a fluid. A bail or handle 20 is attached to container 10 by a locking system or mechanism. A cover (shown as a cap or lid 40) having threads 46 is attached to threads 34 of a neck 30 of body 12 (see FIG. 9 and FIG. 10). A selectively removable pour spout (fitment) 38 is interference or snap fit within neck 30 as shown in FIG. 1 and FIG. 8 for controlled pouring of a fluid, such as paint for example, from container 10.

[0019] A primary seal is formed by engagement of threads 46 of lid 40 with threads 34 of neck 30. An interference fit between the lid 40 and the neck 30 is accomplished by rotating or twisting the lid 40 onto neck 30 a predetermined distance. Such seal is intended to inhibit fluid from leaking from the container 10 when the lid 40 is fixed to the neck 30. An additional seal is formed by a resilient gasket 50 which

is integrally formed with the lid 40 to complete the seal between the lid 40 and the neck 30 of the container 10.

[0020] Referring to FIGS. 3-7, a container cap 40 serves both as a lid and a dish for material held in the container, for example, paint. The container cap 40 includes a top surface 42 and a downwardly extending wall 44, portions of which extend from the top 42 of the cap 40 between the fitment 38 and the neck 30 of the container 10. The container cap 40 also includes an internal threaded portion 46 that threadably engages threads 34 formed on the neck 30 of the container 10 and an unthreaded portion 48 a space distance from the threaded portion 46. The container cap 40 can be configured to receive a molded logo, a clear window to see the interior 13 of the container 10, or other indicia to identify the contents of the container 10.

[0021] The container cap 40 is formed by two or more materials, for example a rubber based, thermal plastic elastomer, polypropylene, polyvinyl chlorides, thermal plastic polyurethanes and combinations of such material, or other type of plastic or elastomer using a two-shot or bi-injection molding process.

[0022] The wall 44 of the container cap 40 is formed of a rigid material such as a polypropylene copolymer. A resilient gasket 50 is integrally formed between the threaded portion 46 and the unthreaded portion 48 of the wall 44 of the container cap 40. The formation of the resilient gasket 50 occurs during the second shot of the two-shot injection molding process.

[0023] In operation, the first shot of rigid thermal plastic material forms the container cap 40 top surface 42 and the threaded portion 46 and unthreaded portion 48 of the wall 44. A rotating core of the mold, that is typically used to form the threads 46, is retracted half of the thread pitch by rotating the mold core 180 degrees. A pin is simultaneously retracted from the top portion of the cap 40, thereby opening a flow path for a second shot of an elastomeric material, such as a thermal plastic elastomer to be injected into the mold to form the integral resilient gasket 50 between the threaded portion 46 and unthreaded portion 48 of the wall 44 of the cap.

[0024] In one embodiment, the gasket 50 is configured to contact the fitment 38 positioned in the opening 32 and the neck 30 of the container 10. See FIG. 10.

[0025] In an alternative embodiment, the resilient gasket 50 is configured to contact the fitment 38 that is positioned in the container 10 and fluidly seal the opening 32 of the container 10. See FIG. 11. Further gasket 50 could be configured to contact only the neck 20 and not the fitment 38.

[0026] The container cap 40 can be configured to provide a portion of a second material to extend into recesses formed on the outer periphery of the cap 40, which may assist the user in gripping and manipulating the cap 40 on and off the container 10. Various textures may be molded into the second material and different colors of the material may be employed during the molding process.

[0027] In order to assist the user of the container 10 during the sealing of the container 10 with the container cap 40, a torque indicator 60 can be provided on the container 10. A convenient location for the torque indicator 60 is on the top side or horizontal top portion 16 of the container 10 as shown in FIG. 1. It should be understood that other convenient locations for the torque indicator can be used.

[0028] The torque indicator 60 includes a range indicator 62 and a visual indicator 68. The range indicator 62 can be molded on the container 10 or it can be a decal such as a sticker, or label, or printing, affixed to the container 10 by any convenient manner. The visual indicator 68 can be molded on the cap 40. In the illustrated embodiments, the visual indicator 68 is molded on the cap 40 during the second shot of the two-shot injection molding process described above.

[0029] Further modifications may be made to the design, arrangement and combination of the elements without departing from the scope of the invention. For example, a top member including one or more of the features discussed above such as the spout and others may be integrally formed with the body of the container or may be fastened to the container as a separate component. Additionally, the container may include transparent areas to allow the user to see the contents of the container. Further, the container cap may include a transparent area to indicate whether the cap is securely attached to the container to prevent paint from accidentally being spilled. Although the container has been referred to as a paint container, other liquids may be stored and poured as well. Some of the features have a unique application to the storage and application of paint, other features may be used for other liquids as well.

Additionally, a label that is applied to the container may include a blank white portion to permit the user of manufacturer to dab or paint a sample of the paint in the container to clearly show what color is contained within the container and how it will appear when painted on a white background. It is also noted that the features described in this specification and shown in the figures either alone or in combination may also be combined with individual or multiple features disclosed herein. These and other modifications may be made in the design, arrangement, and combination of the elements without departing from the scope of the invention as expressed in the appended claims.